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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/133,741 | 08/13/1998 | DAVID ROBERT BALDWIN | TD-143 | 6925 |

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| EXAMINER | |
|---|---|
| NGUYEN, THU V | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 3661 | |

DATE MAILED: 06/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/133,741 | BALDWIN, DAVID ROBERT | |
| | Examiner | Art Unit | |
| | Thu V Nguyen | 3661 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *27 March 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-3,7-27,29-35 and 47-52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,7-27,29-35 and 47-52* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

## DETAILED ACTION

The amendment filed on March 27, 2002 (paper No. 20) has been received and considered. By the amendment, claims 36-38 have been canceled, and claims 1-3, 7-27, 29-35, 47-52 are now pending in the application.

### *Drawings*

1. Figure 2-3, and 6 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

### *Claim Objections*

2. Claims 29-35 are objected to as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claims, or amend the claims to place the claims in proper dependent form. Claim 29-35 depend on claim 36. However, claim 36 has been canceled as indicated by applicant on page 9 of the amendment. Since dependency of the claims as not certain, the claims are not further considered in this Office Action.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-2, 7-11, 14-15, 48, 50-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rossin et al (U.S Patent No. 5,877,773) in view of Sutherland ("Micropipelines", Communications of the ACM, June 1989, volume 32, number 6).

As per claim 1, Rossin et al teaches a method for clipping graphics primitives. The method comprises the steps of: using a clipping algorithm with a buffer to store input and output polygons of the primitive (fig.5A; col.9, lines 60-67 and col.10, lines 1-27; and col.4, lines 17-32); and indicating whether each vertices is visible in each plane (col.7, lines 58-65).

Rossin et al does not explicitly disclose using only one circular buffer for storing input and output vertices of a primitives. However, Sutherland suggests using a singular circular buffer to store clip data (page 732, second column, section "Other Devices using the Same Protocol"; page 735, first column, first paragraph). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to replace the buffers of Rossin et al with a circular buffer of Sutherland. The motivation for this would have been to built a very simple interface characteristics for the clipping application which involves operation in which vector length changes.

As per claim 2, rasterizing only vertices which are visible in all planes would have been well known to a person of ordinary skill in the art at the time the invention was made.

As per claim 7, using frustum view volume as clipping planes would have been well known to a person of ordinary skill in the art at the time the invention was made. It would have been an obvious choice to a person of ordinary skill in the art at the time the invention was made to use the well known frustum volume instead of the clipping planes of Rossin et al in order to perform view clipping using the Sutherland Hodgman clipping method of Rossin et al.

As per claim 8-10, Rossin et al teaches there are six planes in view volume (col.3, lines 31-36). Further, including more than six view planes would have been well known to an ordinary person skilled in the art at the time the invention was made. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to include more than six planes in the view volume, since increasing the number of viewing plane and adjusting the size of the circular buffer require only routine skill in the art.

As per claim 11, Rossin et al teaches Sutherland and Hodgman clipping algorithm (col.19, lines 53-58).

As per claim 14, Sutherland does not explicitly disclose using two circular buffers to store input and output polygons. However, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to integrate duplicate circular buffer of Sutherland, because integrating duplicated circular buffer together involves only routine skill in the art (St. Regis Paper Co. v.bennis Co., 193 USPQ 8).

As per claim 15, Rossin et al teaches a buffer with maximum storage of sixteen vertices (col.5, lines 44-48).

As per claim 48, refer to discussion in claim 1 above. Further, Rossin et al discloses a display hardware (col.1, lines 24-26); a processor connected to provide graphic data 108 (fig.1); a geometry and lighting accelerator with a transformation unit (col.7, lines 50-53); a geometry unit which performs clip testing, clipping the primitives, outputting a view clip code, and outputting clipped graphic data to be rendered (col.7, lines 58-67; col.8, lines 1-8); moreover, using a video rendering hardware connected to a display hardware would have been well known to a person of ordinary skill in the art at the time the invention was made; since Rossin et al discloses a computer graphics (col.1, lines 14-15, lines 54-61), Rossin et al inherently discloses the video rendering hardware as claimed.

As per claim 50, Rossin et al teaches polygon and triangle primitive (col.1, lines 24-33).

As per claim 51, refer to discussion in claims 11 above.

5. Claims 16-17, 19-24, 26-27, 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rossin et al (U.S Patent No. 5,877,773) in view of Sutherland ("Micropipelines", Communications of the ACM, June 1989, volume 32, number 6) and further in view of Watkins et al (U.S Patent No. 5,361,386).

As per claim 16, 19, 21, 47, refer to discussion in claims 1 above. Rossin et al does not disclose defining all vertices of a primitive using relational coordinates. However, Watkins et al teaches defining all vertices of a primitive using relational coordinates as claimed (col.9, lines 66-68 and col.10; and col.11). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to define the vertices of a primitive in barycentric coordinate as taught by Watkins et al in the clipping method of Rossin et al. The motivation for this would have been to facilitate interpolation to determine the color and light of the intercepted points of the clipping planes and the polygon and to easily determine if a point on the clipping plane in inside or outside the polygon as taught by Watkins et al in abstract and col.9, lines 4-17.

As per claim 17, 22-24, 26-27, refer to discussion in claims 2, 7-8, 11, 14-15 above.

As per claim 20, Rossin et al discloses polygon and triangle primitive (col.1, lines 24-33).

6. Claims 3, 12-13, 49, 52, are rejected under 35 U.S.C. 103(a) as being unpatentable over Rossin et al (U.S Patent No. 5,877,773) in view of Sutherland ("Micropipelines", Communications of the ACM, June 1989, volume 32, number 6) and further in view of Narayanaswami (U.S Patent No. 5,613,052).

As per claim 3, 49, Rossin et al does not discloses performing clipping prior to lighting or texture calculation. However, Narayanaswami teaches performing clipping prior to lighting or texture calculation (col.1, lines 12-25, lines 53-67). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to perform clipping before lighting and texture calculation. The motivation for this would have been to reduce computational requirements and increasing rendering speed by clipping the data that lies outside the field of vision as motivated by Narayanaswami in col.1, lines 15-25.

As per claim 12-13, 52, Narayanaswami discloses indicating vertex visibility by a bit flag (col.5, lines 44-67; and col.6, lines 1-14). Narayanaswami does not teach 12 bit visibility flag. However, Narayanaswami teaches selecting the number of the visibility bit flag according to the number of non-overlapping region (col.5, lines 44-52). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to select the twelve bit flag when the twelve clipping planes of Rossin et al is used.

7. Claims 18, 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rossin et al (U.S Patent No. 5,877,773) in view of Sutherland ("Micropipelines", Communications of the ACM, June 1989, volume 32, number 6) and further in view of Watkins et al (U.S Patent No. 5,361,386) and Narayanaswami (U.S Patent No. 5,613,052).

As per claim 18, 25 refer to discussion in claims 3, 12 above.

***Remarks***

a. Examiner initiates an interview to Mr. Robert Groover (reg. No. 30,059) on May 23, 2002 in response to the request by applicant in paper No. 17. However, since applicant is not ready for the interview, Mr. Groover asked to send an Office Action instead.

b. The status of the claims are becoming complicated. In this amendment (on March 27, 2002, paper No. 20) on page 9, applicant indicates that claims 1-3, and 7-35 are unchanged, and indicate canceling claim 38. However, claims 28, 38 have been canceled in the amendment paper No. 6 (on September 21, 2000) in page 5. Examiner would like to summarize the status of claims herein: claims 1-3, 7-27, 29-35, 47-52 are now pending. Claims 28, and 38 have been canceled in the amendment on September 21, 2000 (paper No.6) on page 5; Claims 4-6, and 39-46 have been canceled in the amendment on April 20, 2001, paper No. 13 on page 7; claims 36-38 have been canceled on March 27, 2002 (paper No.20).

c. To facilitate proper entering of the claim status, applicant is suggested to indicate canceled claims *at the very first line in the "in the claims" section* of the *clean copy* of the amendment.

***Response to Arguments***

8. Applicant's arguments filed on March 27, 2002 (paper No. 20) have been fully considered but they are not persuasive.

In response to applicant argument on page 7, Sutherland suggests using a circular buffer in place of several memory devices (page 732, second column in section "other devices using the same protocol"). Sutherland further teaches in page 735, first column, first paragraph that the pipeline of Sutherland could be used for clipping operation. Rossin teaches using a random access memory to stores the processed coordinates of the polygon and a memory to track the index of the vertices stored in the random access memory, since it would have been well known that the ring buffer does not requires a memory to track the index of the vertex location, and since Sutherland suggests using a pipeline which can be constructed with a circular buffer for clipping process, an ordinary person skilled in the art at the time the invention was made would be able to replace the memories of Rossin with the pipeline including a circular buffer of Sutherland in order to provide an elastic capability for the clipping device of Rossin as motivated by Sutherland in page 720, last two lines of first column, and line 1 of second column, and page 735, first paragraph of the first column.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

**Any response to this final action should be mailed to:**

**Box AF**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

**or faxed to:**

(703) 305-7687, (for formal communications; please mark "EXPEDITED PROCEDURE")

**Or:**

(703) 305-7687 (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park V, 2451 Crystal Drive, Arlington. VA., Seventh Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thu Nguyen whose telephone number is (703) 306-9130. The examiner can normally be reached on Monday-Thursday from 8:00 am to 6:00 pm ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Cuchlinski, can be reached on (703) 308-3873. The fax phone number for this Group is (703)305-7687 .

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703)308-1113.

NTV

May 23, 2002

WILLIAM A. CUCHLINSKI, JR.
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